openreach

SIN 437

Issue 1.9

October 2025

Suppliers' Information Note

For The Openreach Network

OPENREACH WHOLESALE EXTENSION SERVICE 1000 SAN (WES1000 SAN), WHOLESALE END TO END EXTENSION SERVICE 1000 SAN (WEES1000 SAN) and WHOLESALE EXTENSION LOCAL ACCESS SERVICES 1000 SAN (WES-LA 1000 SAN)

Service & Interface Description

Each SIN is the copyright of British Telecommunications plc. Reproduction of the SIN is permitted only in its entirety, to disseminate information on the BT Network within your organisation. You must not edit or amend any SIN or reproduce extracts. You must not remove BT trade marks, notices, headings or copyright markings.

This document does not form a part of any contract with BT customers or suppliers.

Users of this document should not rely solely on the information in this document, but should carry out their own tests to satisfy themselves that terminal equipment will work with the BT network.

BT reserves the right to amend or replace any or all of the information in this document.BT shall have no liability in contract, tort or otherwise for any loss or damage, howsoever arising from use of, or reliance upon, the information in this document by any person.

Due to technological limitations a very small percentage of customer interfaces may not comply with some of the individual characteristics which may be defined in this document. Publication of this Suppliers' Information Note does not give or imply any licence to any intellectual property rights belonging to British Telecommunications plc or others. It is your sole responsibility to obtain any licences, permissions or consents which may be necessary if you choose to act on the information supplied in the SIN.

This SIN is available in Portable Document Format (pdf) from: https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do Enquiries relating to this document should be directed to: orsinsfa@openreach.co.uk

CONTENTS

Openreach Confidential
Openreach logo are trademarks of British Telecommunications plc. © British Telecommunications plc 2025. Openreach Limited, Registered office: 6 Gracechurch Street, London EC3V 0AT.Registered in England and Wales no. 10690039

1. INTRODUCTION 3
2. SERVICE OUTLINE 3
3. CUSTOMER INTERFACE 4
3.1 CONNECTOR 4
3.2 TRANSMISSION 5
3.3 NETWORK LINK BREAK 5
4. POWER SUPPLY 5
4.1 GENERAL 5
4.2 INSTALLATION AND TESTING 5
4.3 AC POWER CONNECTION 5
4.4 DC POWER CONNECTION 6
4.5 ADDITIONAL DETAILS 6
5. CP/ CUSTOMER APPARATUS DESIGN / INSTALLATION ADVICE 7
6. TECHNICAL SPECIFICATION 7
7. FURTHER INFORMATION 7
8. REFERENCES 7
9. ABBREVIATIONS 8
10. HISTORY 8

FIGURE

FIGURE 1. TYPICAL WES/WEES/WES-LA 1000 (SAN) SERVICE CONFIGURATION 3

1. Introduction

This Suppliers' Information Note (SIN) describes the Openreach Wholesale Extension Service 1000 (SAN), Wholesale End To End Extension Service 1000 SAN (WEES1000 SAN) and Wholesale Extension Service Local Access 1000 SAN (WES-LA 1000 SAN). The SIN also provides information about the service for use by Terminal Equipment (TE) manufacturers and developers.

WES/WEES services are high speed, point-to-point data circuits that are permanently connected and available 24 hours a day, 365 days per year. WES provides a secure link between a third party customer Site and the Communications Provider's (CP's) network at a CP's Site. Openreach WEES provides a secure link between a third party site and another third party site. WES-LA provides a secure link between an end user site and the serving exchange serving that site, with the circuit terminating at a CP presence at that serving exchange (a Licensed Facility in the BT Exchange).

Any specific technology mentioned in this document is current as of today, however it may be subject to change in the future. Should the specification of the interface be changed, this will be notified by a new issue of this SIN. Openreach reserves the right to adapt technology to deliver WES/WEES as new developments are made. All services are delivered over an uncontended transmission path.

SPECIAL NOTICE

Openreach has formally notified the withdrawal from new supply of all WES WEES BES products up and including 1Gbit/s as from 1st June 2011along with the removal of all modify options (Bandwidth upgrade, shift, re-site & rearrange) as from 1st June 2013.

Openreach have notified End of Support as from 1 April 2018 for all WES WEES BES (up to and including 1Gbits). Please refer to Openreach briefing GEN061/14 (www.openreach.co.uk)

WES WEES BES 2.5Gbit/s and 10Gbit/s will remain available along with WES Aggregation

2. Service Outline

The WES 1000 (SAN Extension) service operates at a speed of 1.062Gbit/s in full duplex mode at a radial distance of up to 25km between sites The WES-LA only provides access as far as the serving exchange and, as this is the only exchange involved, main link radial distances between exchanges are not applicable. For enquiries concerning connection availability between particular sites and for further information on the WES/WEES/WES-LA 1000 (SAN Extension) service please contact your Openreach Sales & Relationship management team.

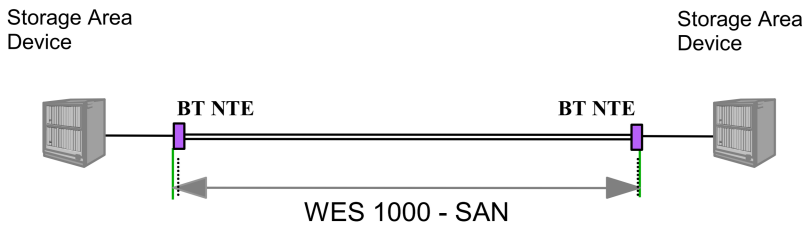

Figure 1. Typical WES/WEES/WES-LA 1000 (SAN) Service Configuration

Fibre channel is commonly used for building 100 MBps Storage Area Networks (SANs) and it is intended that this service will be used for the interconnection of SANs. The A end must be the Communication Provider and the B end must be a third party customer, hence this will connect the CP SAN to the Third Party Customer SAN. Or the Openreach WEES 1000 SAN provides a secure link between a third party site and another third party site.

In SAN configurations, Fibre Channel allows separation of storage devices from servers. Data is a critical business asset, and many businesses are using Fibre Channel to build business continuance (disaster recovery) SANs that span a metropolitan area.

3. Customer Interface

3.1 Connector

The interface is at the Network Termination Point (NTP), i.e. the point of connection between the Openreach Network Terminating Equipment (NTE) and the attached equipment.

The CP / customer interface consists of a Dual SC type fibre interface port which may be either short-wave (850nm) multimode OR long-wave (1310nm) singlemode (not both on a single NTE). The type of interface required must be specified at time of ordering. The service does not include any fibre patch connectors that may be required between the NTE and attached equipment.

The maximum fibre length between the NTE and CP/ customer equipment is 500 metres for short-wave (850nm multimode) ports when 50/125 micron optical patch cords are used or 220 metres if 62.5 micron optical patch cords are used. For long-wave (1310nm single-mode) ports, the maximum fibre length is 10km.

The dual SC type connector is as specified by ANSI / INCITS Fibre Channel[1] standards. Attention is drawn to the Intellectual Property Rights (IPRs) set out in the

preface of this agreed International standard. It is the responsibility of the TE supplier to ensure that they have the necessary rights from the owner of the IPR. The IPR owner has stated that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world.

3.2 Transmission

The NTE is capable of transporting data at 1.062 Gbit/s (Fibre Channel baud rate). The NTE re-times the data passing through it. The re-timing process controls jitter at the customer port output on the NTE. Re-timing is required for a device to be fully compliant with Fibre Channel specification[1].

The NTE does not have the capability to intercept and / or view 'customer data'.

3.3 Network Link Break

When a break is detected on the Openreach network link, a specific 8B / 10B code is continuously transmitted on the CP/customer interface to indicate the network state. This continues until such time as the Openreach network is repaired. The control code transmitted under this network fault condition is K28.5.

4. Power supply

4.1 General

By placing a order with BT the customer has accepted the conditions placed by BT. In relation to powering of equipment, the customer must comply with the requirements of BS7671 and the details giving within the 'DC Power Planning and Installation Guide for WES-BES Products' document.

The Openreach NTE is locally powered and offers AC or DC power options. The CP will be required to provide either a local 50 Hz AC supply in the form of standard 13 Amp power socket(s); or dual -50V DC power distributions and Earth connections, with all wiring colour schemes conforming to BS7671 (IEEE Wiring Regulations). It will be the customers' responsibility to ensure that the power supply is fused and safe for Openreach to use. These should be in close proximity to the NTE installation location.

4.2 Installation and Testing

In addition to the NTE and Chassis powering requirements below, a spare 50Hz AC mains supply 13A socket should also be provided in close proximity to the NTEs, to power BT test equipment during both initial commissioning and subsequent maintenance support activities.

4.3 AC Power Connection

AC power connection between Openreach equipment and the power socket will be made using a standard IEC320 C13-14 power lead fitted with a standard 13A plug.

The NTE itself has dual power supply units internally, but only requires one AC mains supply socket.

- **For most installations:**

  This will require one mains connection for each NTE provided, and the consumption of the Openreach NTE and power unit chassis in this unmanaged service arrangement will be no more than 30 Watts per NTE.

- **For larger installations (at Openreach discretion):**

  At Openreach's discretion, where a large number of systems of one type are being deployed, a 16-slot NTE chassis version may be deployed. This will require two mains connections for each 16-slot chassis provided. The consumption with a maximum number of 16 service cards provided will be no more than 200 Watts per chassis.

4.4 DC Power Connection

The DC In-Line (Molex) connector is specified as the standard method of connecting DC power by Openreach, and represents the "Demarcation Point" between Openreach and the customer. At their site, the customer is required to provide suitable power and earth connection up to the demarcation point, and be responsible for the supply, wiring and labelling up to the demarcation point. Openreach will not supply or install the DC distribution system as part of the standard Ethernet installation.

- **Customer provided wiring up to the Openreach specified In-Line connector.**

  Wiring, MCB isolation or fuse (i.e. C Type MCB or Cartage Fuse), must be provided by the customer, up to and including the DC in-line connector, as per BT's requirements stated within the 'DC Power Planning and Installation Guide for WES-BES Products' document with respect to:

  (i) Correctly rated MCB/Fuse, refer to the WES/WEES product handbook for correct rating

  (ii) Correct labelling of wiring and MCB/fuse positions compliant with BS 7671,

  (iii) Correct size of cable for required voltage drop at required maximum current,

  (iv) Separately fused isolatable A & B power supplies, as detailed in the 'DC Power Planning and Installation Guide for WES-BES Products' document.

  The in-line connector has a maximum current handling capability of 11A, and is not to be used for equipment requiring greater than a 11A supply (such as the Nortel OPTera 5200 equipment, which require 20A feeds).

4.5 Additional Details

For further details on the provision of DC Power, see the 'DC Power Planning and Installation Guide for WES-BES Products' available on the Openreach Ethernet website.

If there is a conflict between DC power information contained in the 'DC Power Planning and Installation Guide for WES-BES Products' and the SIN document, the order of precedence shall be as follows:

(a) DC Power Planning and Installation Guide for WES-BES Products

(b) SIN

5. CP/ Customer Apparatus Design / Installation Advice

WES/WEES/WES-LA 1000 (SAN) service has been designed such that any vendor's Fibre Channel device that has ANSI FC-PI compatible interfaces of the short-wave (850nm) or long-wave (1310nm) variety will be able to connect to each NTE.

6. Technical Specification

Protocol	Fibre Channel, ANSI/INCITS 352-2002
Data Format	8B/10B
Line Rate	1.062 Gbit/s
Power Requirement	Mains voltage 50 Hz AC input
Customer Fibre Connector	Dual SC (as defined by FC-PI)
Short-Haul Fibre Cable *Customer provided*	Multimode 850nm, 50/125 or 62.5/125 micron
Short-Haul Fibre *Maximum Delivery Distance*	500m from NTE's multimode port using 50/125 micron fibre or 220m using 62.5micron fibre
Long-Haul Fibre Cable *Customer provided*	Single-mode 1310nm, 9/125 micron
Long-Haul Fibre *Maximum Delivery Distance*	10Km from NTE's single-mode port
Operating Temperature	0 to 40 °C
Laser Safety	Class 1 under all conditions as per IEC 825-1

7. Further Information

Please contact your Openreach Sales & Relationship management team or see http://www.openreach.co.uk/orpg/products/wes/eoiwes.do.

8. References

[1]	ANSI / INCITS 352-2002	Information technology - Fibre Channel - Physical Interfaces (FC-PI)

9. Abbreviations

ANSI	American National Standards Institute
WES	Wholesale Extension Service
CPE	Customer Premises Equipment
FC-PI	Fibre Channel - Physical Interface
INCITS	InterNational Committee for Information Technology Standards
IPRs	Intellectual Property Rights
Mbit/s	Megabits per second
MBps	Megabytes per second
MCB	Mini Circuit Breaker
NTE	Network Terminating Equipment
NTP	Network Terminating Point
SAN	Storage Area Network
SIN	Suppliers' Information Note

10. History

Issue 1.0	26 Nov 2004	
Issue 1.1	29 Sept 2006	Changes made for Equivalence of Input compliant products, including addition of WEES.
Issue 1.2	21 Dec 2006	Addition of WES-Local Access (WES-LA)
Issue 1.3	08 Mar 2007	Contact details in "Further Information" clause updated.
Issue 1.4	29 Oct 2007	Service description amended in accordance with updated DC power guidance
Issue 1.5	25 June 2009	Editorial amendments, including general clarifications and updated references
Issue 1.6	February 2011	Amended to notify no new service will be made available
Issue 1.7	February 2013	Amended to notify no new supply of Shift, re-arrange, resite or bandwidth upgrade on all WES WEES BES (up to 1G/bit) as from 1st June 2013
Issue 1.8	February 2015	Amended to notify End of Support as from 1 April 2018 for all WES WEES BES (up to and including 1Gbits).

		Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
Issue 1.9	May 2020	Change SINet site references from http://www.btplc.com/sinet/ to https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do
Issue 1.9	September 2021	Product notified end of life. No changes required.
Issue 1.9	October 2022	Product notified end of life. No changes required.
Issue 1.9	October 2023	Product notified end of life. No changes required.
Issue 1.9	October 2025	Product notified end of life. No changes required.

-END-